



Arizona State Implementation Plan

**Revision to the Arizona Regional Haze Plan for the Salt
River Project Coronado Generating Station**

**Air Quality Division
July 19, 2016**

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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The Arizona Department of Environmental Quality (“ADEQ”) is proposing a source-specific revision to the Arizona Regional Haze State Implementation Plan (“Arizona RH SIP”) that establishes an alternative to best available retrofit technology (“BART”) for the Salt River Project Agricultural Improvement and Power District’s (“SRP”) Coronado Generating Station (“CGS”). This document provides information necessary for revision and supplementation of the Arizona RH SIP and the U.S. Environmental Protection Agency (“EPA”) Federal Implementation Plan (“FIP”) for CGS. Specifically, this document includes:

- A demonstration that CGS’s alternative to BART (“BART Alternative”) satisfies the “Better-than-BART” (“BTB”) test; and
- A demonstration that the SIP revision will not interfere with the ability of the program area to attain/maintain the National Ambient Air Quality Standards (“NAAQS”) or any other requirement of the Clean Air Act (“CAA”).

1.2 Regulatory Background

CGS consists of two pulverized coal-fired, electric utility steam boilers (Units 1 and 2), which generate approximately 762 megawatts (MW) (net) of electricity. Units 1 and 2 were completed and started operation in 1979-1980. CGS generates electricity for sale and the SIC code for this operation is 4911. Units 1 and 2 are dry-bottom turbo-fired boilers with a net rated output of 380 MW and 382 MW, respectively, primarily firing low-sulfur western coals. Both units are Regional Haze Program - BART eligible units per 40 CFR § 51.301. ADEQ determined that the CGS units may reasonably be anticipated to cause or contribute to visibility impairment at a Class I area and, as such, are subject to BART.

On February 28, 2011, ADEQ submitted to EPA the state’s initial Regional Haze SIP for the first planning period of the regional haze program. This submission included BART determinations for CGS Units 1 and 2. On December 5, 2012, EPA issued a final rule approving in part and disapproving in part ADEQ’s Regional Haze SIP.¹ EPA also promulgated a FIP for the CGS units with an oxides of nitrogen (“NO_x”) emission limit of 0.065 pounds per million British thermal unit (lb/MMBtu), applicable across both CGS units on a 30-boiler-operating-day average basis. The final compliance date for the BART FIP NO_x limit is December 5, 2017 (five years from the date of publication of the FIP) and involves installation and operation of selective catalytic reduction (“SCR”) systems for control of NO_x emissions on both CGS units. Unit 2 was equipped with SCR in 2014, as required by a consent decree between SRP and the United States.²

SRP filed a petition for administrative reconsideration of the NO_x BART determination for CGS with EPA in February 2013. EPA granted reconsideration of the NO_x emission limit and compliance methodology (i.e., the methodology used to calculate compliance with the plant-wide average) in April 2013. On March 31, 2015, EPA proposed revisions to the NO_x BART determination for the CGS units.³ The proposal established a Unit 1 BART NO_x limit of 0.065 lb/MMBtu and a Unit 2 BART NO_x limit of 0.080 lb/MMBtu. Both limits are to be met on a 30-boiler-operating-day average. EPA did not propose to change the initial compliance date for the NO_x BART limits, which remains December 5, 2017. EPA has taken final action

¹ 77 Fed. Reg. 72512 (Dec. 5, 2012).

² United States v. Salt River Project Agricultural Improvement and Power District, Civil Action No. 2:08-cv-1479-JAT (D. Ariz.), August 12, 2008.

³ 80 Fed. Reg. 17010 (Mar. 31, 2015).

on the reconsideration, which was published in the Federal Register on April 13, 2016, approving a unit-specific NO_x BART limit of 0.065 lb/MMBtu for Unit 1 and a unit-specific NO_x BART limit of 0.080 lb/MMBtu for Unit 2 (2016 EPA BART Reconsideration).^{4,5}

In June 2014, EPA released its proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units, commonly referred to as the Clean Power Plan (“CPP”). This rule was finalized in August 2015.⁶ The final rule gave states until September 2018 to submit final plans outlining how they will meet the requirements set forth by EPA in the final CPP. Efforts to comply with the CPP may conflict with SRP’s existing obligations under EPA’s BART FIP. On February 9, 2016, the U.S. Supreme Court granted a stay, halting implementation of the CPP pending the resolution of legal challenges to the program in court.⁷ This action has created additional uncertainty for SRP with respect to the nature and timing of its compliance obligation for the CGS units.

On January 22, 2016, SRP submitted an Application for a Significant Permit Revision and a Regional Haze State Implementation Plan Revision for CGS, referred to as the application to ADEQ. On July 19, 2016, SRP submitted addendums to the application. In these submittals, SRP requested that ADEQ adopt the BART Alternative as a revision to the Arizona Regional Haze SIP and submit the revision to EPA for approval.

2.0 REVISION TO ARIZONA’S REGIONAL HAZE PROGRAM - 2016

2.1 BART Alternative Operating Strategies for CGS

To meet the requirements of the regional haze rule (“RHR”), SRP evaluated a BART Alternative comprised of two alternative operating strategies as BTB compliance options as follows.

2.1.1 Operating Strategy (OS-1): Seasonal Curtailments Followed by SCR on Unit 1

This operating strategy requires SRP to comply with the Unit 1 interim BART alternative operating strategy referred, also to herein as interim operating strategy (“IS”) followed by installation of an SCR system on Unit 1 no later than December 31, 2029, to achieve a NO_x limit of 0.065 lb/MMBtu at Unit 1 on a 30-boiler-operating-day average. The interim operating strategy includes four separate seasonal curtailment periods for CGS Unit 1 coupled with options for operation at a lower sulfur dioxide (“SO₂”) emissions rate below the BART limits for both units and a NO_x emissions rate below the current permit limit for Unit 1. In each year, the length of the required curtailment period for CGS Unit 1 is dependent on the NO_x emissions performance of Unit 1 and the SO₂ emissions performance of Units 1 and 2.

2.1.2 Operating Strategy (OS-2): Seasonal Curtailments Followed by Unit 1 Shutdown

Under this operating strategy, SRP would comply with the interim operating strategy followed by permanent cessation of operation of Unit 1 no later than December 31, 2029.

2.1.3 BART Alternative Implementation Schedule

Per the BART Alternative, the interim operating strategy will take effect on December 5, 2017, the compliance date established by EPA’s BART FIP. In the first year of implementation, Unit 1 will begin

⁴ 81 Fed. Reg. 21735 (Apr. 13, 2016).

⁵ The 2016 EPA BART Reconsideration was not challenged and is considered final.

⁶ 80 Fed. Reg. 64662 (Oct. 23, 2015).

⁷ The stay applies pending resolution of the legal challenges to the program in the U.S. Court of Appeals for the D.C. Circuit and, if applicable, in the Supreme Court.

the interim operating strategy on December 5 and end according to the emissions performance of that year. In subsequent years, the interim operating strategy will begin and end according to the emission performance of the corresponding year. Once SRP achieves certainty regarding future operation of CGS Unit 1 under a final approved CPP state plan, SRP will finalize its choice of BART Alternative operating strategy and will submit a notification to EPA and ADEQ. This notification will be made no later than December 31, 2026.

The CPP is currently stayed by the Supreme Court, increasing uncertainty about the schedule for implementation of the rule and thus impacting SRP's ability to finalize plans regarding CGS. Based on the anticipated litigation schedule, there will likely not be a final decision in the CPP litigation until at least 2018. Assuming the CPP implementation schedule revision provides a day-for-day compliance deadline extension to account for the stay, initial compliance could be expected to begin in 2025, 1 year prior to the 2026 BART Alternative Option notification deadline. With additional pre-notification planning and recognizing the need to potentially take other preliminary steps before the notification deadline, SRP expects that it will have sufficient time to design and construct an SCR if it selects OS-1 and to make the necessary resource arrangements if it selects OS-2.

If OS-1 is selected, SRP will apply the interim operating strategy until an SCR system is installed and operating, no later than December 31, 2029. If OS-2 is selected, SRP will apply the interim operating strategy until the Unit 1 closure no later than December 31, 2029.

Figure 1 shows an overview of the BART Alternative operating strategies for CGS Unit 1. Table 1 lists the emission limits for Unit 1 and Unit 2 and the curtailment periods for Unit 1 for the four seasonal curtailment options under the interim operating strategy phase of the BART Alternative. For comparison purposes, the emission limits required by the 2016 EPA BART Reconsideration for NO_x and 2012 ADEQ BART for SO₂ as approved by EPA (hereinafter referred to as "BART control strategy") are also included in Table 1. The interim operating strategy and compliance methods are incorporated as a new Attachment "E" to the facility's Operating Permit (Appendix B).

Figure 1: Overview of BART Alternative Operating Strategies for CGS Unit 1

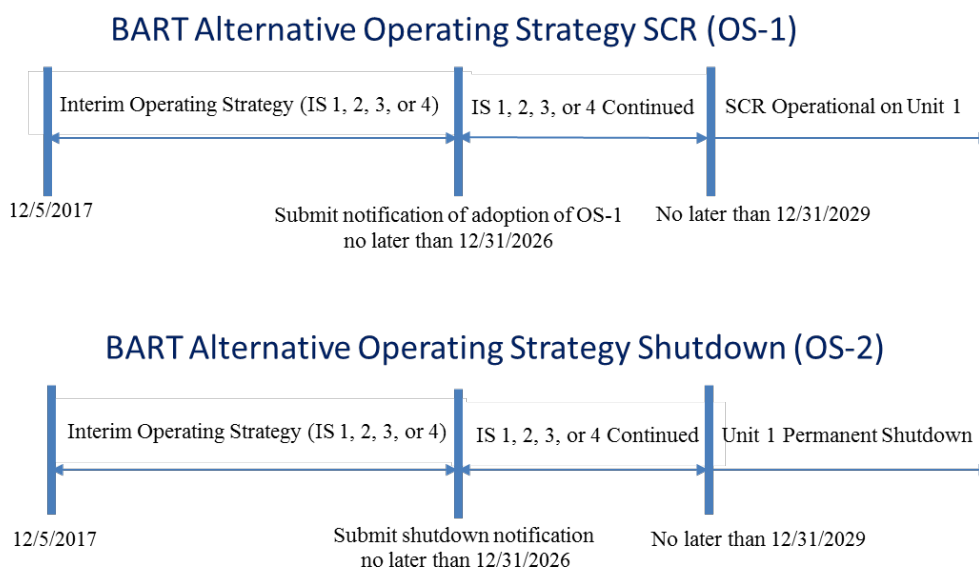


Table 1: Emission Limits for CGS under BART Alternative Operating Strategies

| Control Strategy | | Unit 1 (lb/MMBtu) (30-boiler- operating-day average) | | Unit 2 SO ₂ (lb/MMBtu) (30-boiler- operating-day average) | Unit 1 Curtailment Period |
|---|--|---|-----------------|--|------------------------------|
| | | NO _x | SO ₂ | | |
| BART control strategy (2016 EPA BART Reconsideration for NO _x and 2012 ADEQ BART for SO ₂) | | 0.065 | 0.080 | 0.080 | N/A |
| BART Alternative Operating Strategy SCR Option (OS-1) | | | | | |
| Interim Operating Strategy | IS1 | 0.320 | 0.080 | 0.080 | Oct. 1-Apr. 15 |
| | IS2 | 0.320 | 0.070 | 0.070 | Oct. 21-Jan. 31 |
| | IS3 | 0.320 | 0.050 | 0.050 | Nov. 21-Jan. 20 |
| | IS4 | 0.310 | 0.060 | 0.060 | Nov. 21-Jan. 20 |
| Final BART Alternative Strategy | SCR Installation and Operation no later than December 31, 2019 | 0.065 | 0.080 | 0.080 | N/A |
| BART Alternative Operating Strategy Shutdown Unit 1 Option (OS-2) | | | | | |
| Interim Operating Strategy | IS1 | 0.320 | 0.080 | 0.080 | Oct. 1-Apr. 15 |
| | IS2 | 0.320 | 0.070 | 0.070 | Oct. 21-Jan. 31 |
| | IS3 | 0.320 | 0.050 | 0.050 | Nov. 21-Jan. 20 |
| | IS4 | 0.310 | 0.060 | 0.060 | Nov. 21-Jan. 20 |
| Final BART Alternative Strategy | Unit Closure no later than December 31, 2029. | 0.000 | 0.000 | 0.080 | N/A |

2.2 Overview of ADEQ’s Evaluation of BART Alternative Operating Strategy

2.2.1 BART Alternative Operating Strategy - 1 – SCR Pathway

The first BART Alternative operating strategy requires SRP to comply with the interim operating strategy followed by installation of an SCR system on Unit 1 no later than December 31, 2029. For this BART Alternative, ADEQ’s evaluations focused on the interim operating strategy since the final BART Alternative operating strategy, viewed in isolation, is identical to the 2016 EPA BART Reconsideration. For the interim operating strategy, each of the four seasonal curtailment options must address the visibility impacts from the CGS units on Class I areas in accordance with EPA’s RHR at 40 CFR § 51.308. Accordingly, ADEQ evaluated each of the seasonal curtailment options under the interim operating strategy to determine whether or achieves greater overall visibility benefits on average as compared to the BART control strategy.

OS-1, which requires installation and operation of an SCR system on Unit 1, triggers prevention of significant deterioration (“PSD”) review for collateral emissions increases for three pollutants: particulate matter less than 10 micrometers (“µm”) mean aerodynamic diameter (“PM₁₀”), particulate matter less than 2.5 µm mean aerodynamic diameter (“PM_{2.5}”), and sulfuric acid mist (“H₂SO₄”). Accordingly, ADEQ has

evaluated OS-1 to determine whether it complies with associated PSD requirements. This evaluation is contained in Appendix C; the PSD review is presented in Technical Support Document of significant permit revision #63088 to Operating Permit #52639).

2.2.2 BART Alternative Operating Strategy - 2 – Shutdown Pathway

Under OS-2, in which SRP chooses to cease operation of Unit 1 by December 31, 2029, SRP will comply with the interim operating strategy until the unit closes no later than December 31, 2029. The shutdown option will result in long-term environmental benefits, while providing for interim emission reductions, achieved by the end of the first regional haze planning period, that are better than BART.

2.3 ADEQ’s Evaluation of BART Alternative Operating Strategy

2.3.1 Evaluation Criteria

Under the RHR, evaluations of BART Alternatives must contain the following three elements:

- A demonstration that the alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the state and covered by the alternative program. 40 CFR § 51.308(e)(2)(i).
- A requirement that all necessary emissions reductions take place during the first long-term planning period for regional haze. 40 CFR § 51.308(e)(2)(iii).
- A demonstration that the emissions reductions resulting from the alternative measure will be surplus to those reductions resulting from measures adopted to meet requirements of the Clean Air Act as of the baseline date of the SIP. 40 CFR § 51.308(e)(2)(iv).

The following sections outline how the BART alternative achieves these three elements.

2.3.2 Demonstration of Greater Reasonable Progress

40 CFR § 51.308(e)(2)(i) establishes five criteria for demonstrating that BART Alternative measures will achieve greater reasonable progress than would have resulted from installation and operation of BART, as follows:

- 40 CFR § 51.308(e)(2)(i)(A) - A list of all BART-eligible sources. ADEQ included a list of all BART-eligible sources in the Arizona Regional Haze SIP.⁸
- 40 CFR § 51.308(e)(2)(i)(B) - A list of all BART-eligible sources that would be covered by the BART Alternative. The BART Alternative covers emissions from CGS Units 1 and 2.
- 40 CFR § 51.308(e)(2)(i)(C) - An analysis of BART and associated emissions reductions from the units covered by the BART Alternative. This information is provided in the sections below and in the Technical Support Document (“TSD”) for this SIP submittal.
- 40 CFR § 51.308(e)(2)(i)(D) - An analysis of projected emissions reductions through application of the BART Alternatives. This information is provided in the sections below and in the TSD.

⁸ 79 FR 56322, 77 FR 75704, 75719–75720; 78 FR 46142, 46151–46152

- 40 CFR § 51.308(e)(2)(i)(E) - A determination that the alternative “achieves greater reasonable progress than would be achieved through the installation and operation of BART at the covered sources.” The determination is to be made based either on the relevant criteria in 40 CFR § 51.308(e)(3) or on the “clear weight of evidence” as provided in 40 CFR § 51.308(e)(2)(i)(E). This information is presented here.

40 CFR § 51.308(e)(3) specifies two tests for determining whether the BART Alternative achieves greater reasonable progress than BART. Under that provision, if the distribution of emissions under the alternative measure is not substantially different than under BART, and the alternative measure results in greater emissions reductions, then the alternative measure may be deemed to achieve greater reasonable progress. However, under 40 CFR § 51.308(e)(3), if the distribution of emissions is significantly different or if the alternative measure does not result in greater emissions reductions, then a dispersion modeling analysis to determine the differences in visibility between BART and the BART Alternative may be conducted for each impacted Class I area, for the worst and best 20% of days (W20% and B20% days), and the regulations do not preclude use of dispersion modeling analyses in other circumstances to support a BART Alternative. The modeling demonstrates “greater reasonable progress” if both of the following criteria are met:

- Prong 1: Visibility does not decline in any Class I area; and
- Prong 2: There is an overall improvement in visibility, determined by comparing the average differences between BART and the BART Alternative over all affected Class I areas.

ADEQ has determined that the BART Alternative operating strategies do not necessarily achieve greater emissions reductions than the 2016 EPA BART Reconsideration, because, although there will be greater SO₂ and PM emissions reductions under the alternative, there will be higher NO_x emissions as compared to BART for CGS. (See subsection 2.3.4 below.) Therefore, SRP opted to perform a dispersion modeling analysis to demonstrate that the BART alternative would result in “greater reasonable progress” consistent with the two-prong test above. SRP conducted the photochemical grid model (“PGM”) visibility assessment with The Comprehensive Air Quality Model with Extensions (“CAMx”).⁹ In July 2015, EPA proposed revisions to its modeling guidelines that would delist CALPUFF as the EPA-preferred long range transport model and recommended PGMs for applications involving secondary PM_{2.5} formation, including visibility impairment due to sulfate and nitrate.¹⁰ Moreover, to demonstrate “greater reasonable progress,” ADEQ believes that a full PGM that includes modeling all emissions in the modeling domain would be more appropriate than CALPUFF.

SRP evaluated the BART Alternative operating strategies (OS-1 and OS-2) consisting of the interim operating strategy followed by election either to install and operate SCR on Unit 1 or to permanently retire Unit 1 as explained above for the BTB test. The evaluation covered six scenarios, including the Baseline scenario (current conditions), the BART control strategy (2016 EPA BART Reconsideration for NO_x and 2012 ADEQ BART for SO₂ and PM), and the interim operating strategy composed of four Unit 1 seasonal curtailment options (IS1, IS2, IS3 and IS4). Detailed modeling information is provided in Appendix A, TSD, Section 5.

⁹ <http://www.camx.com/>

¹⁰ Revision to the Guideline on Air Quality Models: Enhancement to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter – Appendix W. 40 CFR Part 51. 80 Fed. Reg. 45340 (July 29, 2015).

Prong 1

The first prong of the BTB test examines the differences in visibility impacts (delta dv) between the Baseline and each of the seasonal curtailment options under the interim operating strategy in the BART Alternative operating strategy (Baseline – BART Alternative). The BART Alternative operating strategy passes the prong 1 test if the difference in visibility impact is positive or zero for all Class I areas for the W20% and B20% days. Table 2 shows the minimum differences in visibility impacts across all Class I areas between the Baseline and the alternative strategies during the interim operating strategy period. Since the minimum differences are all positive, all four seasonal curtailment options under the interim operating strategy exhibit visibility improvements compared to current conditions at all Class I areas. Therefore, under the BART Alternative with the specified interim operating strategy “visibility does not decline in any Class I area” and hence the interim operating strategy passes the first prong of the BTB test.

Table 2: Minimum Delta Deciview Difference between Interim Operating Strategy under BART Alternatives and Baseline at Class I Areas (Baseline – BART Alternative)

| Interim Operating Strategy | Average Best 20% Days | | Average Worst 20% Days | | Annual Average | |
|----------------------------|-----------------------|----------|------------------------|----------|----------------|----------|
| | Absolute (dv) | Relative | Absolute (dv) | Relative | Absolute (dv) | Relative |
| IS1 | 0.0002 | 18.14% | 0.000002 | 0.11% | 0.0005 | 19.45% |
| IS2 | 0.00002 | 3.65% | 0.0001 | 7.30% | 0.0004 | 13.75% |
| IS3 | 0.0001 | 11.55% | 0.0003 | 13.67% | 0.0006 | 18.73% |
| IS4 | 0.00004 | 6.06% | 0.0002 | 9.86% | 0.0004 | 15.36% |

Prong 2

For the second prong of the BTB test, the BART Alternative must demonstrate that it will achieve an overall improvement in visibility, averaged across all affected Class I areas compared to the BART control strategy. If the BART Alternative shows lower visibility impacts than the BART control strategy when averaged over all Class I areas for both the B20% and W20% days in the modeled year (even if the differences are marginal), the alternative passes the second prong of the BTB test.

Table 3 displays the differences in visibility impacts (delta dv) between the BART control strategy and the BART Alternative (BART- BART Alternative) for each Class I area for each time averaging method (B20% days, W20% days and annual) during the interim operating strategy period. In accordance with the regulatory language requiring a comparison of the average differences over all affected Class I areas, Table 3 provides the average differences over all affected Class I areas for the B20%, the W20% days and all days. As indicated in Table 3, for each of the four seasonal curtailment options in the interim operating strategy and for each averaging method, positive visibility impact benefits are obtained. Positive visibility impact benefits indicate that the BART Alternative provides an “overall improvement in visibility” compared to the BART control strategy, and hence the interim operating strategy passes the second prong of the BTB test.

Table 3: Average Delta Deciview Differences between Interim Operating Strategy under BART Alternatives and BART Control Strategy over Class I Areas (BART-BART Alternative)

| Interim Operating Strategy | Average Best 20% Days | | Average Worst 20% Days | | Annual Average | |
|----------------------------|-----------------------|----------|------------------------|----------|----------------|----------|
| | Absolute (dv) | Relative | Absolute (dv) | Relative | Absolute (dv) | Relative |
| IS1 | 0.0017 | 21.79% | 0.00003 | 0.63% | 0.0006 | 7.88% |
| IS2 | 0.0002 | 2.50% | 0.0001 | 1.26% | 0.0001 | 1.04% |
| IS3 | 0.0004 | 3.62% | 0.0003 | 9.13% | 0.0005 | 7.90% |
| IS4 | 0.0003 | 0.35% | 0.00001 | 2.00% | 0.0001 | 2.09% |

2.3.3 Timing of Emissions Reductions

The interim operating strategy under the BART Alternative will take effect on the same compliance date established by EPA's BART FIP, December 5, 2017. This date is within the period of the first long-term strategy for regional haze. Beginning on this date, under the BART Alternative approved by ADEQ, SRP will remain obligated to maintain continuous compliance with one of the BART Alternative.

Under BART Alternative OS-1, seasonal curtailments followed by SCR on Unit 1, the final BART Alternative strategy (SCR installation and operation) will take effect later than the period of the first long-term strategy for regional haze. However, the additional emissions reductions associated with the final BART Alternative strategy (use of SCR on Unit 1) are not necessary to demonstrate that the CGS BART Alternative operating strategy would achieve greater reasonable progress than BART. This is because, as described in sub-section 2.3.2 above, the interim operating strategy by itself passes the two-prong test under 40 CFR 51.308(e)(3). Therefore, under OS-1, the interim operating strategy will provide visibility improvement compared to the BART control strategy, followed by an indefinite number of years of operation with the same emissions limitations as under the 2016 EPA BART Reconsideration. Thus, implementation of OS-1 will result in overall greater reasonable progress than BART and all necessary reductions will occur during the first long-term planning period under Arizona's regional haze requirements, consistent with 40 CFR § 51.308(e)(2)(iii).

Under BART Alternative OS-2, seasonal curtailments followed by Unit 1 shutdown, the final BART Alternative strategy (early retirement) will take effect no later than December 31, 2029. If SRP chooses OS-2, it must notify ADEQ and EPA of its decision to do so, and the early retirement of Unit 1 by no later than December 31, 2029 would become an enforceable term of the SIP. This is beyond the period of the first long-term strategy for regional haze. However, the additional emission reductions associated with the final compliance strategy are not necessary to demonstrate that the CGS BART alternative operating strategy would achieve greater reasonable progress than BART. This is because, as described in section 2.3.2 above, the interim operating strategy by itself passes the two-prong test under 40 CFR 51.308(e)(3). Therefore, under OS-2, the interim operating strategy will provide visibility improvement compared to the BART control strategy. Following the interim operating strategy, the final BART Alternative strategy (Unit 1 shutdown) would achieve greater emission reductions than the emission reductions that would be achieved under the BART control strategy. Thus, in all events, implementation of OS-2 will result in overall greater reasonable progress than BART and all necessary reductions will occur during the first long-term planning period under Arizona's regional haze requirements, consistent with 40 CFR § 51.308(e)(2)(iii).

2.3.4 Emissions Reductions During Interim Operating Strategy

Information on emissions reductions under the BART Alternative is presented below. In Table 4, ADEQ compares estimated emissions under the baseline (without additional controls), BART control strategy (2016 EPA BART Reconsideration for NO_x and 2012 ADEQ BART for SO₂ and PM), and BART Alternative operating strategies under the interim operating strategy (Table 4). Detailed emission calculations are provided in Appendix A, TSD, Section 4.

Table 4: Annual Emission Reductions Associated with BART and Interim Operating Strategy (part of BART Alternative OS-1 and OS-2) as Compared to the 2014 Baseline Emissions

| Strategy Comparison with Baseline* | NO _x Reduction | | SO ₂ Reduction | | PM Reduction** | |
|------------------------------------|---------------------------|------------|---------------------------|------------|----------------|------------|
| | (tons/year) | Percentage | (tons/year) | Percentage | (tons/year) | Percentage |
| BART Control Strategy | -4,096 | 63% | 0 | 0% | 0 | 0% |
| IS1 | -2,738 | 42% | -684 | 26% | -257 | 26% |
| IS2 | -1,453 | 22% | -649 | 24% | -136 | 14% |
| IS3 | -832 | 13% | -1,125 | 42% | -79 | 8% |
| IS4 | -972 | 15% | -820 | 31% | -79 | 8% |

*Reductions in emissions presented here are for both CGS units.

**This PM metric includes only filterable PM emissions and does not include condensable PM emissions such as the H₂SO₄ and other PM emissions that would result from installation and operation of SCR at Unit 1 under the BART Control Strategy.

As shown in Table 4, SRP's BART Alternative provides significant reductions in emissions of NO_x, SO₂, and PM as compared to the 2014 baseline. Although the NO_x reductions from the interim operating strategies would be less than the 63% reduction under the BART control strategy, each of the interim operating strategies would produce significant SO₂ and PM emissions reductions. SO₂ emissions reductions from the CGS units would range from 24% to 42%, and PM emissions reductions would range from 8% to 26%. This is because, under the BART Alternative, during the interim operating strategy period, SRP would reduce SO₂ emissions from both of the CGS units through (i) annual operation at a lower emissions rate under three of the interim operation strategies and/or (ii) seasonal curtailment of CGS Unit 1. In addition, under the interim operating strategies, SRP would reduce PM emissions through seasonal curtailment of CGS Unit 1.

Administrative and technical procedures for implementing the BART Alternative and associated monitoring and enforcement procedures are presented in the significant permit revision to the Title V permit for the facility included as Appendix B.

2.3.5 Surplus Emissions Reductions Associated with BART Alternative

The base year for regional haze SIPs is 2002.¹¹ The emissions reductions resulting from the BART Alternative will be surplus to those reductions resulting from measures adopted to meet requirements of the Clean Air Act as of 2002.

2.3.6 Supplemental Analysis of IMPROVE Monitoring Data

The relative contribution of NO_x, SO₂, and PM emissions reductions to visibility improvement is another

¹¹ See Memorandum from Lydia Wegman and Peter Tsirigotis, 2002 Base Year Emission Inventory SIP Planning: 8-hr Ozone, PM_{2.5}, and Regional Haze Programs, November 8, 2002.

important factor for determining the BART Alternative operating strategies. ADEQ discussed the relative contribution of NO_x and SO₂ emissions to visibility impairment in the BART alternative Technical Support Document for AEPCO. Specifically, ADEQ noted in the AEPCO BART report that the SO₂-attributed visibility extinction is generally more than three times the NO_x-attributed visibility extinction.¹² For the CGS case, ADEQ further reviewed ammonium sulfate and ammonium nitrate data for all CGS-affected Class I areas over 2004-2014.¹³ ADEQ found that the ratios of SO₂-attributed visibility extinction to NO_x-attributed visibility extinction averaged over all Class I areas are 3.7, 4.2 and 4.2 for the 20% best days, the 20% worst days, and all days, respectively.

ADEQ further reviewed the trends of SO₂-attributed visibility extinction and NO_x-attributed visibility extinction during 2004-2014 at Petrified Forest NP, the nearest Class I area to CGS. Moreover, ADEQ investigated how the NO_x- or SO₂-attributed visibility extinction data responded to the emission reductions of NO_x and SO₂ from CGS and Arizona Public Service Company's Cholla facility ("Cholla"), two significant NO_x and SO₂ stationary sources near the Petrified Forest NP area. ADEQ found that significant emission reductions of SO₂ from both facilities have resulted in the decrease of SO₂-attributed visibility extinction during 2004-2014. In contrast, NO_x-attributed visibility extinction appears to be independent of NO_x emissions of CGS or Cholla. Although significant reductions of NO_x emissions also occurred at both facilities during this period, the NO_x-attributed visibility extinctions did not reflect the benefits that would be expected to have resulted from the NO_x emission controls. Based on the actual IMPROVE monitoring data, ADEQ believes that SO₂ emissions reductions would produce greater visibility improvements than NO_x emissions reductions at CGS-affected Class I areas. The BART Alternative would realize a greater degree of visibility improvement than the BART control strategy due to significant reductions in SO₂ emissions under the interim operating strategy.

Detailed supplemental data analysis is presented in Appendix A, TSD, Section 5.7.

3.0 DEMONSTRATING NONINTERFERENCE UNDER CLEAN AIR ACT SECTION 110(I)

As described in the preceding sections, this revision to Arizona's Regional Haze program incorporates changes to the BART determination and control strategies for CGS. The revised control strategies are intended to replace those contained in the BART Control Strategy (Arizona's February 28, 2011 Arizona RH SIP and EPA's BART FIP, as modified by the 2016 EPA BART Reconsideration). Revisions to a submitted Arizona RH SIP must not interfere with the requirements of the CAA, as described in CAA Section 110(I):

*(I) PLAN REVISIONS - Each revision to an implementation plan submitted by a State under this Act shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 171), or any other applicable requirement of this Act.*¹⁴

This section demonstrates that this SIP revision will not interfere with the ability of the area to attain and maintain the NAAQS or any other requirement of the CAA. Based on the EPA's Draft Guidance on

¹² "AEPCO Apache Generating Station BART Alternative Control Review Technical Support Document," ADEQ, April 15, 2014.

¹³ http://vista.cira.colostate.edu/improve/Data/IMPROVE/summary_data.htm

¹⁴ 42 U.S.C. § 7410(I), 2012; CAA § 110.

Demonstration of Noninterference under section 110(l), the “other applicable requirements” for this SIP revision include:¹⁵

- Regional Haze under sections 169A and 169B of the CAA;
- Prevention of Significant Deterioration (“PSD”);
- Maximum Achievable Control Technology (“MACT”) for Air Toxics; and
- New Source Performance Standards (“NSPS”).

Regarding compliance with PSD requirements, this SIP revision refers to the technical support document for the Significant Permit Revision (Appendix C: Technical Support Document for SPR #63088) that details the best available control technology (“BACT”) determination for H₂SO₄, PM₁₀, and PM_{2.5} as well as the NAAQS and PSD increment modeling for PM₁₀ and PM_{2.5}. This document will focus on the demonstration of noninterference with NAAQS and noninterference with Regional Haze regulations.

3.1 Demonstrating Noninterference with Attainment of the National Ambient Air Quality Standards (NAAQS)

As indicated above, a state must accompany each revision to an air quality SIP with a demonstration that the SIP revision will not interfere with attainment or maintenance of the NAAQS or with applicable requirements for reasonable further progress (“RFP”). In determining noninterference, ADEQ examined emissions expectations during 2015-2035, including annual emissions expectations during the 2017 to 2029 period, for the relevant pollutants (PM, SO₂, and NO_x) under the BART Alternative (Appendix A, TSD, Section 4.3). ADEQ also went one step further to examine potential impacts the revised control measures may have on the attainment and maintenance of the ozone NAAQS.

ADEQ’s analysis and findings are described below, starting with the relevant regulatory background in Section 3.1.1. Sections 3.1.2, 3.1.3, 3.1.4, and 3.1.5 evaluate and discuss potential impacts on the NAAQS for PM, SO₂, NO₂, and ozone, respectively.

3.1.1 Regulatory Background

Title I of the CAA requires EPA to set NAAQS for pollutants that are designated harmful to public health or the environment. It must set both primary and secondary standards for each regulated pollutant that is designated by the Agency. Primary standards must specify threshold levels that ensure the protection of public health, whereas secondary standards are designed to protect public welfare (i.e., decreased visibility, and damage to animals, crops, vegetation, and buildings). To date, EPA has established primary and secondary NAAQS for six air pollutants, commonly referred to as criteria pollutants, which are: carbon monoxide (“CO”), lead (“Pb”), nitrogen dioxide (“NO₂”), ground-level ozone (“O₃”), particulate matter (“PM”), and sulfur dioxide (“SO₂”). EPA is required by the CAA to periodically evaluate and revise the air quality standards, when necessary, to ensure the protection of the public’s health and welfare.

CAA Section 107(d) directs each state to make recommendations of designation of, and EPA to designate, areas within that state’s jurisdiction as either: 1) meeting the NAAQS (“attainment”), 2) not meeting the NAAQS (“nonattainment”), or 3) cannot be classified (“unclassifiable”). EPA will designate an area “nonattainment” when the air quality data shows that those locations are violating or contributing to violations in a nearby area of a NAAQS for a criteria pollutant. A state is required to create a nonattainment SIP describing its plan for achieving attainment of the NAAQS by the applicable deadline, as well as RFP towards attainment of the NAAQS in the interim. Once an area reaches attainment status, the state is then

¹⁵ <http://www.4cleanair.org/Oldmembers/members/committee/criteria/110STAPPA.pdf>

required to develop and submit a maintenance SIP for approval prior to re-designation of the area to attainment.

EPA will designate an area as “attainment” or “unclassifiable” when the air quality data shows that those areas are not violating the NAAQS or there is not enough data to determine violations exist. Areas designated as attainment or unclassifiable are not required to create attainment plans since those areas have not been determined to violate the relevant NAAQS. Instead, attainment areas must show noninterference with the continued attainment and maintenance of the NAAQS as part of the initial infrastructure SIP, which is submitted within three years after the NAAQS is promulgated. If air quality monitoring data later shows that an attainment area is in violation of the NAAQS following a prior designation as attainment, it will be re-designated as nonattainment and then will be required to develop an attainment plan.

CGS is located in Apache County. The area is currently designated as attainment or unclassifiable for CO, Pb, NO₂, O₃ (2008 NAAQS), PM_{2.5} (1997, 2006, and 2012 NAAQS), PM₁₀, and SO₂ (1971 NAAQS).¹⁶ Although designations have not yet been made for the 2010 SO₂ NAAQS, the area was recommended as attainment or unclassifiable for that NAAQS under CAA Section 107(d)(1)(A).¹⁷ In addition, designations have not yet been made for the 2015 O₃ NAAQS. Table 5 shows the current designation status of the area for each criteria pollutant listed in 40 CFR § 81.303.¹⁸

Table 5: Attainment Status for Apache County, Arizona

| Pollutant | Primary/Secondary | Averaging Time | Designation |
|-------------------|------------------------------|-------------------------|--|
| Carbon Monoxide | Primary (1971) | 8-hour | Unclassifiable/Attainment |
| | | 1-hour | Unclassifiable/Attainment |
| Lead | Primary and Secondary (2008) | Rolling 3 Month Average | Unclassifiable/Attainment |
| Nitrogen Dioxide | Primary (2010) | 1-hour | Unclassifiable/Attainment |
| | Primary and Secondary (1971) | Annual | Cannot be classified or better than national standards |
| Ozone | Primary and Secondary (2015) | 8-hour | Yet to be designated |
| | Primary and Secondary (2008) | 8-hour | Unclassifiable/Attainment |
| PM _{2.5} | Primary (2012) | Annual | Unclassifiable/Attainment |
| | Secondary (1997) | Annual | Unclassifiable/Attainment |
| | Primary and Secondary (2006) | 24-hour | Unclassifiable/Attainment |
| PM ₁₀ | Primary and Secondary (1987) | 24-hour | Unclassifiable |
| Sulfur Dioxide | Primary (2010) | 1-hour | Not yet designated |
| | Primary (1971) | 24-hour | Better than national standards |
| | Primary (1971) | Annual | Better than national standards |
| | Secondary (1971) | 3-hour | Better than national standards |

¹⁶ See EPA, *The Green Book Nonattainment Areas for Criteria Pollutants*, at <http://www.epa.gov/airquality/greenbook/> (last visited June 22, 2016).

¹⁷ See generally ADEQ, *Air Quality Division: Plans*, at <http://www.azdeq.gov/environ/air/plan/pm2.5.html> and <http://www.azdeq.gov/environ/air/plan/so2.html>.

¹⁸ 40 CFR § 81.303, 2013.

3.1.2 Noninterference with Attainment of NAAQS for PM₁₀ and PM_{2.5}

For the BART Alternative OS-1, where a SCR system will be installed and operated on Unit 1, the PM emissions control strategies in the SIP are generally consistent with those of the 2011 AZ SIP except that they include a seasonal curtailment period, resulting in lower annual PM emissions during 2017-2029. The BART Alternative OS-2 also includes a seasonal curtailment period from 2017 to the date of unit closure. The shutdown of Unit 1 would significantly reduce facility-wide PM emissions, resulting in additional long-term environmental benefits. For either of the options, the PM annual emissions would be equal to or lower than the existing emissions for any period.

The CGS facility is located in Apache County, Arizona. The area is currently designated as attainment or unclassifiable for PM₁₀ and PM_{2.5}, and there are no nonattainment or maintenance SIPs that would rely on emission reductions at CGS to ensure continued attainment of the NAAQS. The BART Alternative OS-2 would result in significant emission reductions of PM₁₀ and primary PM_{2.5}. Under the BART Alternative OS-1, the installation of a SCR system would result in significant increases in emissions of H₂SO₄ and thus emissions of PM₁₀ and primary PM_{2.5} by December 31, 2029. However, the dispersion modeling analysis indicates that these emissions increases will comply with the NAAQS for PM₁₀ and PM_{2.5} (Appendix C: Technical Support Document for SPR #63088). Moreover, both options would achieve significant emission reductions of SO₂ and NO_x (as discussed later in Sections 3.1.3 and 3.1.4), which is an effective strategy for reducing secondary PM_{2.5} formation. Therefore, the BART Alternative will not result in any interference with attainment or maintenance of the PM₁₀ and PM_{2.5} NAAQS or with RFP requirements.

3.1.3 Noninterference with Attainment of NAAQS for SO₂

For the BART Alternative OS-1 with SCR installation on Unit 1, the SO₂ emissions control strategies are generally consistent with or more stringent than those of the 2011 AZ SIP and moreover include a seasonal curtailment period, which will result in lower annual emissions during the period of the interim operating strategy. The BART Alternative OS-2 also includes a seasonal curtailment period from December 2017 to the date of unit closure. The shutdown of Unit 1 would significantly reduce facility-wide SO₂ emissions, resulting in additional long-term environmental benefits. For either of the options, the SO₂ annual emissions would be equal to or lower than the existing emissions for all periods.

Apache County is designated as “better than national standard” for the 1971 SO₂ NAAQS. Although designations have not yet been made for the 2010 SO₂ NAAQS, the area was recommended as attainment/unclassifiable under CAA Section 107(d)(1)(A). There are no nonattainment or maintenance SIPs that rely on emission reductions at CGS to ensure continued attainment of the NAAQS. Because the BART Alternative for CGS will result in SO₂ emissions that are equal to or lower than the Arizona RH SIP during all periods, the BART Alternative will not interfere with attainment or maintenance of the SO₂ NAAQS or with RFP requirements.

3.1.4 Noninterference with Attainment of NAAQS for NO₂

Under the BART Alternative OS-1 with SCR installation on Unit 1, the implementation of the interim operating strategy would moderately or slightly reduce NO_x emissions during 2017-2029 due to seasonal curtailment. From the year 2030 onwards, the installation of a SCR system at Unit 1 would achieve significant additional emission reductions of NO_x. The BART Alternative OS-2 includes a seasonal curtailment period from late 2017 to the date of unit closure. The shutdown of Unit 1 would significantly reduce facility-wide NO_x emissions, resulting in additional long-term environmental benefits. For either of the options, the NO_x annual emissions would be lower than the existing emissions for all periods.

Apache County is currently designated as attainment/unclassifiable for the NO₂ NAAQS, and there are no nonattainment or maintenance SIPs that rely on emission reductions at CGS to ensure continued attainment of the NAAQS. Since the control strategies at CGS will result in NO_x emission reductions relative to the existing operating conditions of the facility, they will not interfere with attainment or maintenance of the NO₂ NAAQS.

The NO_x emissions during 2017-2029 under the BART Alternative are higher than those under the EPA FIP or BART Reconsideration. While the BART Alternative is less stringent than the EPA FIP for NO_x controls during 2017-2029, Section 110(l) of the CAA does not require a BART alternative to be more stringent for emission controls for each criteria pollutant in every instance, and at every point in time, to supersede a prior BART determination. Rather, Section 110(l) of the CAA addresses whether the SIP revisions will interfere with attainment of the NAAQS or RFP. Apache County does not rely on the EPA FIP for CGS to ensure continued attainment of the NO₂ NAAQS or to meet any RFP requirements. The EPA FIP does not represent existing control measures that have been implemented for attainment or maintenance of the NAAQS. Facility-wide emissions of NO_x at CGS will continue to be reduced under the BART Alternative compared to current levels. The SIP revision will improve current air quality.

3.1.5 Noninterference with Attainment of NAAQS for Ozone

Ozone is formed when volatile organic compounds, NO_x and oxygen combine in the atmosphere in the presence of sunlight. Apache County is designated attainment/unclassifiable for the 2008 ozone NAAQS. There is no evidence that Apache County will violate the 2015 NAAQS, and the proposed boundaries of the nonattainment area for the 2015 ozone NAAQS issued by ADEQ on May 31, 2016 do not include Apache County.¹⁹ There are no nonattainment or maintenance SIPs that might rely on emission reductions at CGS to ensure continued attainment of the NAAQS or to meet RFP requirements. As explained above, the BART Alternative is less stringent for NO_x (a precursor of ozone) than the EPA FIP during 2017-2029. However, Apache County does not rely on the EPA FIP for CGS to ensure continued attainment of the ozone NAAQS or to meet any RFP requirements. Therefore, the BART Alternative will not interfere with attainment or maintenance of the NAAQS for ozone.

3.2 Demonstrating Noninterference with Regional Haze Program Requirements

To address the problem of regional haze, EPA adopted the Regional Haze Rule in 1999. This rule requires states to adopt regional haze plans to incrementally improve visibility in all Class 1 areas over the next 60 years. The first regional haze plan must include Reasonable Progress Goals (“RPG”) for each Class I area for the year 2018, also known as the “2018 milestone year.”

The CAA requires the installation and operation of BART as expeditiously as practicable, but in no event later than five years after the date of approval of a SIP or promulgation of a FIP.²⁰ Therefore, if it remains in place unchanged, the EPA FIP for CGS will take effect in December 2017. Arizona’s RH SIP also included a long-term strategy for making reasonable progress toward restoring visibility at Class I areas to natural conditions by 2064. EPA’s rules define long-term as ten years, and Arizona’s long-term strategy, submitted to EPA in 2011, includes emission reductions and visibility improvements that are expected by 2018.

As presented in Appendix A, TSD, Section 5, the BART Alternative (including the interim operating strategy) would achieve greater overall visibility benefits on average as compared to the BART Control

¹⁹ http://legacy.azdeq.gov/calendar/draft_rpt_naaqs.pdf (last visited on July 12, 2016)

²⁰ 42 U.S.C. § 7491, 2012; CAA § 169A.

Strategy. BART Alternative OS-1 (SCR installation) would achieve greater visibility improvement than BART during implementation of the interim operating strategy and would achieve emission reductions identical to the BART Control Strategy once SCR is installed and operating. BART Alternative OS-2 (shutdown) would achieve greater visibility improvement than BART during implementation of the interim operating strategy and would achieve greater long-term visibility benefits than the BART Control Strategy at and subsequent to the time of the Unit 1 shutdown. Therefore, the BART Alternative operating strategies will not interfere with the requirements of the Regional Haze program.